Space Weather Forecast

Issued on Thursday, 22 February 2024 at 01:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing chance of Moderate solar activity with a slight chance of Strong activity.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been High, with one Strong flare observed from the large region in the northeast quadrant. This region continues to develop both in size and magnetic complexity, with an extremely complex region apparently developing towards the centre of the group. The only other region on the visible disc is a small but stable region in the north centre of the solar disc. A further returning region appears to be just beyond the southeast limb but has exhibited significant activity while crossing the farside of the Sun.
A large filament has been observed leaving the northwest of the disc around 21/1730UTC and will be analysed once sufficient imagery is available.

Solar Wind / Geomagnetic Activity: Solar winds have been at slow levels but with a slight increase early in the day, likely due to a connection with a previously undiagnosed faster solar wind source. Total magnetic field strength has weakened from moderate to weak levels, as the influence of the fast solar wind also wanes. The important north-south component has varied only weakly. Geomagnetic activity was mainly Quiet, with one Unsettled interval at the start of the period.

Energetic Particles / Solar Radiation: Solar radiation was just above resting background levels but well below the Minor Radiation Storm threshold.

Four-Day Space Weather Forecast Summary
Solar Activity: Low to Moderate activity is forecast with a slight chance of High activity, mainly from the large region in the northeast quadrant, but also potentially from a returning region on the southeast limb.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are forecast over the next four days, although one filament eruption from the northwest quadrant will be analysed and may potentially affect the Earth. Solar winds are ambient, but may reach slightly elevated either later on 24 or during 25 February due to a forecast connection with a fast solar wind. Geomagnetic activity is forecast to be mainly Quiet with isolated Unsettled intervals, with an increased risk of Active intervals due to the possible onset of the fast wind. G1/Minor Storm intervals are also possible, but not considered likely.

Energetic Particles / Solar Radiation: Solar radiation levels will continue to gradually ease towards resting background levels, with a very low risk of an increase during this period due to any significantly energetic flares, especially from the large region in the northeast.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	60	60
Very Active	R3 to R5 X	Yes	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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